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NURSERY NOTES

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IBA DIPPING DOES NOT INCREASE THE NUMBER OF ROOTS AT THE BASE OF JUVENILE BLACK AND WHITE SPRUCE CUTTINGS

Introduction

Techniques for the large-scale propagation of young Norway spruce clones by rooted cuttings are well developed in Sweden at Hilleshog Co. Cuttings from clones, ranging in age from three to 10 years are collected in a dormant state in November and planted into their rooting media shortly thereafter. The cuttings are routinely quick-dipped in an IBA (indolebyturic acid) solution prior to striking into the rooting media. The reason for the IBA treatment is that it increases the number of roots which are produced at the base of the cuttings, so they say. With a greater number of roots it is expected that cuttings would ultimately produce better trees for field planting.

At Orono, we have tried to use IBA to increase the number of roots at the base of black and white spruce juvenile cuttings. However, IBA has not produced any noticeable increase in the number of roots on cuttings rooted in Leach Fir Cell containers.

The purpose of this note is to report on tests carried out to determine if IBA could increase the number of roots produced at the base of juvenile black and white spruce rooted cuttings.

Methods

Cuttings were collected from black and white spruce seedlings, planted into Leach Fir Cell containers and placed in rooting tents. Prior to planting, some cuttings were dipped into indolebutyric acid (IBA) which at times also contained the fungicide Benlate (F). The source of IBA was STIM-ROOT from Plant Products Co.; it was applied as a powder (P) and also diluted in an ethanol/water solution 1:1 by volume (E). Benlate was mixed into the IBA at the rate of 1:5 by volume.

There were three different lots of cuttings involved in these tests:

1) Black spruce cuttings were taken from continuously grown eight month old donor plants on March 26, 1982. Cuttings were treated with five different IBA treatments and a control (Table 1). There were 10 cuttings/treatment and nine replications of each treatment for a

Table 1. Rooting percentages and the number of roots on black and white spruce cuttings treated with and without IBA.

Species	Age of Donor Plants	IBA Treatment	Mean Rooting Percent	Mean Number of Roots Per Rooted Cutting
Black Spruce	8 months	Yes IBA 1000 ppm P	97	5
		Yes IBA 4000 ppm P	88	6
		Yes IBA 325 ppm E	73	4
		Yes IBA 1300 ppm E	81	4
		Yes IBA 2600 ppm E	83	5
		No Control	91	5
White Spruce	8 months	Yes IBA 1000 ppm P	98	4
		Yes IBA 4000 ppm P	96	4
		Yes IBA 325 ppm E	95	3
		Yes IBA 1300 ppm E	99	4
		Yes IBA 2600 ppm E	95	3
		No Control	98	3
White Spruce	4 years	Yes IBA 850 ppm P + F	77	2
		Yes IBA 3350 ppm P + F	77	2
		Yes IBA 6500 ppm P + F	70	3
		Yes IBA 275 ppm E + F	83	2
		Yes IBA 1100 ppm E + F	73	3
		Yes IBA 2200 ppm E + F	85	2
		Yes IBA 1000 ppm P	85	1
		Yes IBA 1300 ppm E	68	3
		Yes IBA 2600 ppm E	70	2
		No Control	78	2

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total of 540 cuttings. The cuttings were left in their rooting environment until July 9, 1982, when they were examined for roots.

2) White spruce cuttings were excised from continuously grown eight month old donor plants on March 26, 1982. Cuttings were treated with five different IBA treatments and a control (Table 1). There were 10 cuttings/treatment and eight replications of each treatment for a total of 480 cuttings. The cuttings were left in their rooting environment until June 11, 1982, when they were examined for roots.

3) Cuttings were collected from seedlings of 2 + 2 white spruce in the Orono Nursery transplant beds on August 10, 1982. There were nine different IBA treatments and a control (Table 1). Again there were 10 cuttings/treatment, but only six replications of each treatment for a total of 600 cuttings. After rooting, the cuttings were examined for roots on November 12, 1982.

Examination of the cuttings for roots consisted of counting (a) the number of cuttings with roots/treatment and (b) the number of roots produced at the base of each cutting. The data were summarized and means were computed.

Results

Rooting percentages and the mean number of roots per rooted cutting for the black and white spruce are summarized in Table 1 for each treatment. Rooting percentages for cuttings in the "control" treatment were similar to those cuttings treated with IBA in all three lots. Also the mean number of roots per rooted cutting was generally similar across all treatments.

The above result was determined from data obtained at the end of the rooting period. There was evidence in this and other tests that the use of IBA may promote faster initial rooting. This will be investigated further.

Conclusion

IBA dipping did not increase the number of roots produced at the base of juvenile black and white spruce cuttings rooted in Leach Fir Cell containers.